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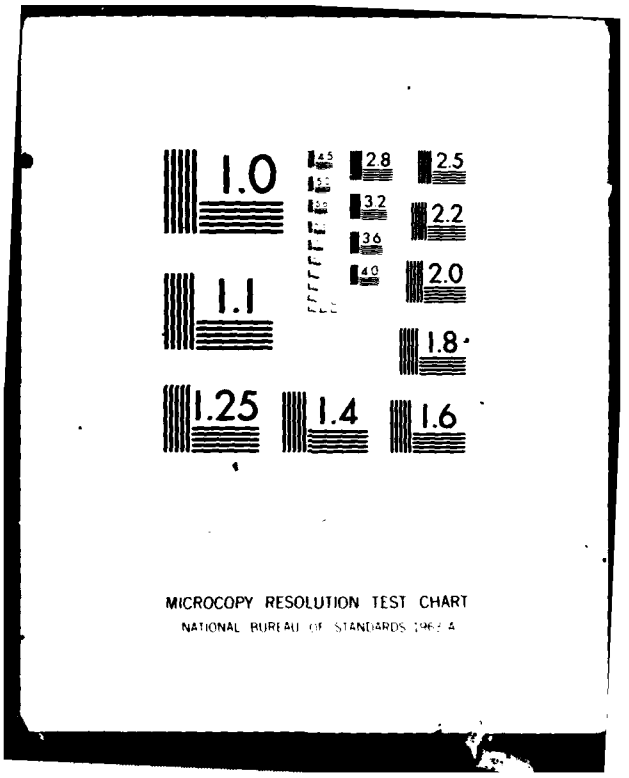
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In pilot training there are two basic, complementary methods via which knowledge is transmitted to the student pilot. Procedure tells the student what to do and technique tells how to do it. This technical note asserts that the essential difference between learning procedure and technique is that procedures are well defined and clearly presented in a standardized format whereas techniques are more dependent on individual interpretation.

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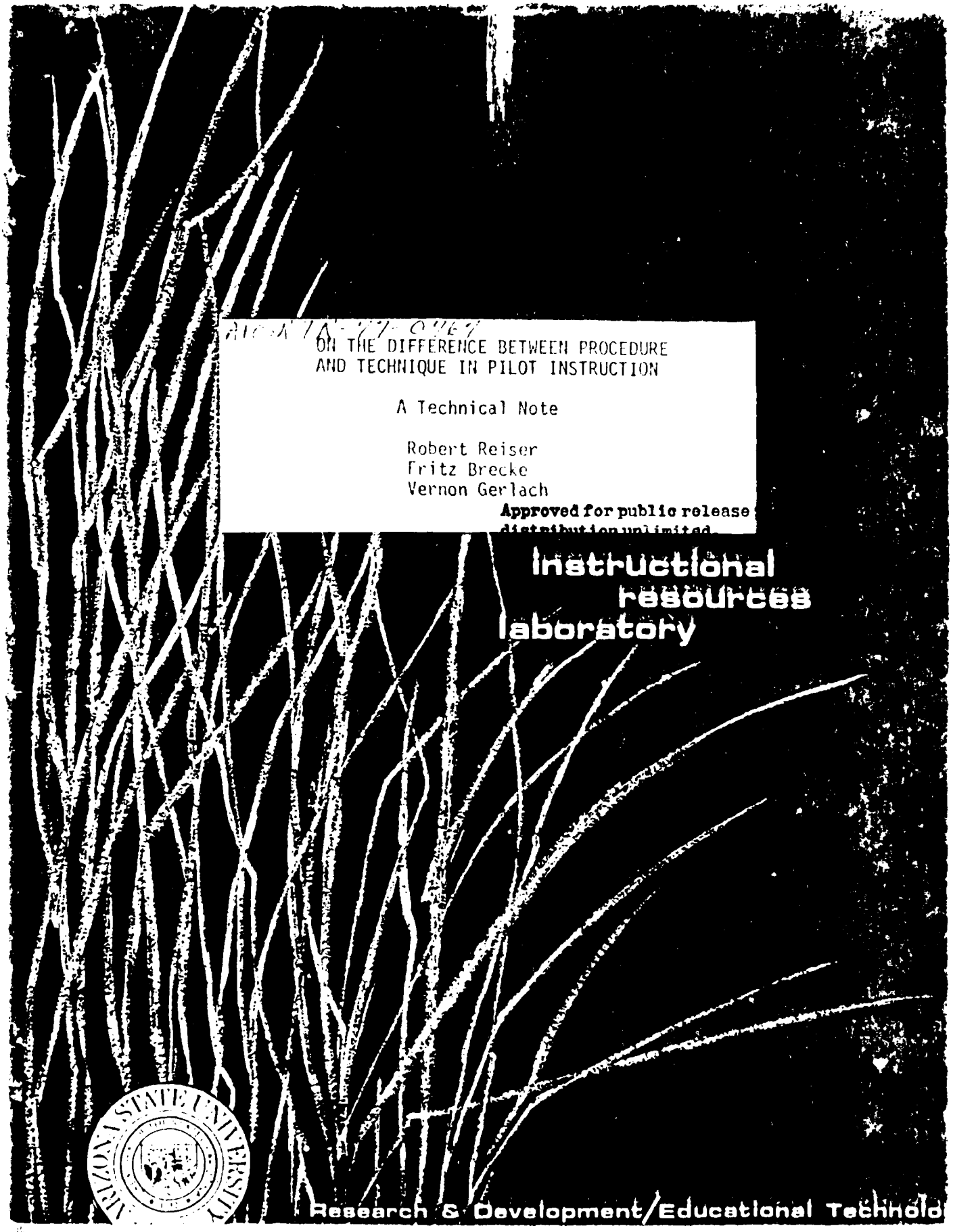

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A Technical Note

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Fritz Brecke
Vernon Gerlach

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Research & Development/Educational Technolo

Cues, Feedback, and Transfer in
Undergraduate Pilot Training

Vernon S. Gerlach, Principal Investigator

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November, 1972

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In pilot training there are two basic, complementary methods via which knowledge is transmitted to the student pilot. These methods are procedure and technique.

Procedure provides information about flight parameters (numerical values such as air speed, vertical velocity, etc. for a particular maneuver). Technique, on the other hand, consists of information on how to observe and manipulate the controls of the aircraft so that the desired flight parameters can be attained. Technique is concerned with cues for appropriate motor behavior. Procedure tells what to do and technique tells how to do it.

Procedure can be found recorded in books and other self-instructional material. The student can, and often is required to, learn procedures on his own. Technique, however, is not found in books. It seems to be part of pilot "lore" and is passed on from the instructor pilot to the student pilot via word of mouth, either during the briefing or while in the aircraft or both.

In order to learn procedure the student need not have any particular entry skill. However, in order to be taught techniques the learner must already be familiar with the procedure (the flight

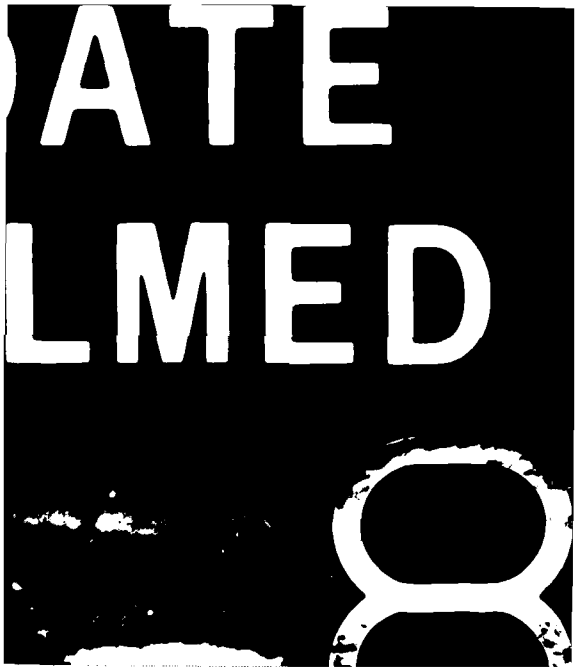
parameters required for that maneuver). In other words, procedure is prerequisite to technique.

Another difference between procedure and technique involves observation of performance. Differences in technique are much harder to observe (e.g., noticing on which instrument the pilot focuses his primary attention), especially if the correct flight parameters are attained.

A final difference between procedure and technique (and perhaps the most crucial difference) is that procedure is standardized, whereas technique is not. Thus all students are expected to perform the maneuver according to procedure (attain the correct flight parameters), but the technique which they use to obtain that performance varies depending on the technique learned from the instructor pilot. It is apparent that instructor pilots differ with respect to the technique they teach and the manner in which they teach it. The instructor pilot probably arrives at the particular technique he teaches as a result of the instruction he once received and a trial and error process. The instructor pilot, working from his own experience, finds whatever seems to work best for him and then passes that technique on to the student pilot (often in a rather unsystematic manner). This kind of technique development and presentation produces results that are often somewhat uneven.

What can be done about this problem? Hypothetically, a much more thorough analysis of a maneuver (going well beyond a mere description of the procedures and moving far into the area of technique) ought to lead to the definition of an optimal technique, a technique that reliably and efficiently produces 100% mastery for most students in relatively little time. Once this technique is identified, it ought to be proceduralized (that is, cues that will describe the technique in terms as precise as those used in describing what is now procedure should be generated). Instruction of the proceduralized technique will be a matter of imparting to the student the cues describing the technique. A standardized manner of instruction (concerning sequencing of cues and mode(s) of presentation) should then be generated quite readily.

Thus that ambiguous term technique will become as standardized as procedure now is. This standardization, this proceduralization, should lead to more effective and efficient instruction.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